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AUTHOR Gutelman, M.
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ABSTRACT

In developing countries, the means of both providing school-age children with a basic education and extending secondary and technical education are adversely affected by the lack of educational facilities. In addition, vast numbers of adults need to be taught to read and write so that they can participate in the process of development. Experts on educational teaching materials agree that modern media could make a major contribution to the efficiency of both formal and nonformal education in developing countries. Numerous evaluations and reports based on actual experience show that, aside from the problem of finance, the key to success in utilizing media lies in proper project planning and organization. The first part of this report deals with the problems that result from inherent technical constraints on the various media and from their impact on methods of organization. Each of the major media is examined in terms of its potential range of use. The second part of the report deals with questions relating to the overall organization and utilization of modern communication media in rural education. UNESCO materials, discussions with special lists, and the author's own experiences provided the background for the report. (Author/MLF)

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# THE USE OF MODERN MEDIA FOR RURAL EDUCATION IN DEVELOPING COUNTRIES - THE ORGANISATIONAL PROBLEMS

M. Gutelman
IIEP Consultant

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
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## INTRODUCTION

### 1. The needs of developing countries in terms of education and educational media

The most characteristic and the most striking social feature of developing countries is the size of their rural population and, in educational terms, the magnitude of their needs. The lack of educational facilities is most apparent in the formal sector: the problem is to provide children of school age with a basic education and extend secondary and technical education. Furthermore, irrespective of whether non-formal education is considered as a complement or as a substitute for formal education, the problem in rural areas is to teach vast numbers of adults to read and write and train them, together with those youngsters who were not fortunate enough to have received a formal education, so that they can participate in the process of development, in its broadest sense. Thus there is a need for education in such subjects as agriculture, nutrition, hygiene, technology, etc.

Such tasks impose a heavy financial burden on a country's resources and many developing countries are unlikely to be able to undertake all these tasks over the next decades unless inexpensive methods of mass education are developed. This problem was high on the agenda of the Conference of Unesco experts on educational teaching materials held in Dakar in November 1975. The subject of modern media was discussed at great length and it was agreed that these could make a major contribution to increasing the efficiency not only of formal education but also and above all in the area of non-formal education.

It would seem however that the integration of modern media within a system of education and their widespread use is not something which can be improvised. Numerous evaluations and reports based on actual experience show that, aside from the problem of finance, the key to success lies in the proper planning and organisation of an audio-visual project.

## 2. The prerequisites for an efficient use of communication media in rural education

The object of this document is to attempt to identify the prerequisites for an efficient use of modern communication media for formal and non-formal education in rural areas in developing countries.

The concept of educational efficiency is fairly difficult to define - in fact, as was stated in a recent symposium, the concept of efficiency has many dimensions whereas performance measurement is concerned only with the acquisition of tangible knowledge, i.e. it will always be difficult, if not impossible, to measure the acquisition of a method of work or the capacity for sustained effort, etc. What is more, we do not know precisely how knowledge is acquired and it is very difficult to establish a direct relationship of cause and effect between the various elements in the teaching/learning process, i.e. the teacher's attitude and the subject matters taught, and the end results. And lastly - and this concerns every form of education - when assessing education's efficiency, should one take into account the consequences and the social and even political effects of its success, e.g. the increased desire amongst educated sections of the population to emigrate to the large urban centres?

Although therefore it is not easy to develop a global concept for the efficiency of education as a whole and, by the same token, for the efficiency of communication media when these are used for education, it is nevertheless obvious that one of the decisive factors affecting this overall efficiency is the way in which the use of such media is organised. Whereas it is true to say that a well organised use of media will not in itself ensure the quality of the education, it is equally certain that poor organisation will considerably diminish the efficiency of these media.

Although one cannot entirely separate the way the teaching process is treated from the way the organisational aspect is handled, the purpose of this study is to examine the factors on the organisational side which make for an efficient use of media, based on the results of more than twenty years' experience throughout the world. In view of the variety of media available and the considerable difference in the requirements of the various countries, there can be no question of

recommending a specific type of organisation. Our aim is a far more limited one, i.e. to highlight what, judging by this experience, are the most common organisational problems encountered in the use of modern communication media in education and to describe how the technical constraints inherent in the media affect methods of organisation, bearing in mind the specific characteristics of the rural environment.

In the first part of this document we shall be dealing with the problems which result from the inherent technical constraints of the various media and their impact on methods of organisation. Although a given medium may be used in a variety of ways, the technology its employs dictates its range of possible uses and this is not limitless if certain standards of organisational and educational efficiency are to be respected. To a certain extent therefore, the nature of a medium has an effect on the choice of target audience, the context in which it is used, and its suitability for formal and non-formal education. For this reason, one needs to examine each of the major media in turn so as to define its potential range of use primarily on the basis of technical considerations.

The second part of this document will deal with questions relating to the overall organisation and utilisation of modern communication media in rural education. It will be a question of cataloguing the major problems involved in setting up an audio-visual auxiliary system for education in rural areas.

The source material used for this report was, for the most part, derived from the Unesco Communication Documentation Centre. It comprises written reports, monographs and articles dealing with this subject. Discussions with a number of specialists and the author's own experience provided a further source of information.

This report makes no claim to be exhaustive - it is intended to be no more than a preliminary catalogue of the problems involved in the organisation and utilisation of media as a support for education in rural areas. As such, it may provide useful background material for the launch of case studies in the field.

## PART I - THE TECHNICAL CHARACTERISTICS OF MEDIA AND THEIR ORGANISATION

### CHAPTER 1

### DEFINITION AND CLASSIFICATION OF MEDIA

1. Definition

In the strict sense of the term, a medium is a message carrier, a vector of information. In practice, however, the term "medium" is used to designate not only the carrier itself but also all of the equipment required for its production, transmission, delivery and reception. For example, the television medium, in the broadest sense of the term, includes the studios and laboratories where the films are made and edited, the transmitting studios, the relay transmitters and the receivers.

Thus, every medium has to have a facility for producing the carrier, a facility for creating the message, a transmitting facility and reception centres. Depending on the nature of the medium, these facilities and centres can be combined or separate, located in the same place or remote one from the other.

The constraints involved in producing the support, creating the messages and their delivery and reception are the prime factors conditioning the way the medium is organised and operated. In view of this, it would seem that the most appropriate way to classify media would be to do this on the basis of the degree of centralisation necessary for the overall control of operations, i.e. the various phases enumerated above.

2. Functional classification

- Media requiring central control

Television and radio fall into this category - together with newsprint, they constitute what are commonly called the "mass media". Their main characteristics from the point of view which interests us, i.e. the problems of organisation, are as follows.

Production of the message carrier requires equipment which is bulky, expensive and generally imported. This equipment has to be operated centrally since to do this at the message reception centres would be impossible in practical terms. Its operation requires highly skilled and generally highly paid staff.

The creation of the message itself is also highly centralised - it also requires highly specialised staff. The content of the message is decided centrally as well as the broadcasting times.

Only reception of the message is local. Where radio and television are concerned, unlike newsprint, there are no problems with regard to the physical delivery of the message, once the equipment has been set up.

Although some television receivers can operate on a battery, TV reception, unlike radio, implies the existence of a power supply. Moreover, the relatively high cost of a television receiver to all intents and purposes precludes the use of this medium as a means of individual education - at least for the rural areas in most developing countries.

- Media requiring partial central control

This category comprises almost all the audio-visual, visual or "little audio" systems, i.e. sound or silent film projectors, 16 mm, 8 mm, Super-8, automatic and non-automatic slide projectors, mechanically, mains or battery operated record players, certain types of video machines, etc. Their basic characteristics are as follows.

In the case of cinematographic projection, the production of the carrier and the creation of the filmed message necessitate bulky and expensive equipment. The films have often to be imported - to make them locally requires highly specialised personnel.

The same is true for the production of audio and audio-visual carriers but the message itself can easily be created locally (e.g. slides, tape recordings, etc.).

In the case of films, the content of the message is usually decided centrally - in the case of audio and audio-visual carriers, the content can be determined locally.

The programming and the way the message is used can be decided locally, at the point of use. Here, there must be projection and sound equipment available - and this raises the problem of spare parts and maintenance, i.e. there have to be people capable of operating and maintaining the apparatus at the point of use. However, such know-how is fairly easy to acquire.

- Media requiring no central control

The main types of media in this category are cassette recording and playing devices, video recording and playing machines and epidiascopes. Their chief features are as follows.

The cost of the carrier is fairly low in the case of cassettes, somewhat higher for video tapes and negligible in the case of epidiascopes.

The message itself can be entirely created on the spot, in some cases by the users themselves. Some basic technical know-how is required to operate cassette recording and playback devices and, more especially, video tape machines, but this is fairly easy to acquire.

- Traditional media

Aside from these modern media, whose one common feature is the fact that they all require some form of power for their operation at the point of use, there are the more traditional types of media which do not require any form of electrical power, i.e. newspapers and periodicals, wall posters, maps, three-dimensional models, flip-books and all other forms of written material plus, of course, chalk and the blackboard. Such media, which are extremely useful, particularly when used in conjunction with modern communication media, are not dealt with in this report. One should not however lose sight of the fact that, in certain isolated regions, they are the only utilisable types of media.

## CHAPTER 2

## THE USE OF TELEVISION FOR FORMAL AND NON-FORMAL EDUCATION

### 1. Technical characteristics affecting the way the medium is used and organised

Television is essentially a centrally controlled medium, i.e. the programming, the times of transmission and the content are primarily determined by the centre producing and transmitting the message. There is therefore very little flexibility at the reception end. This explains why, a priori, television is better suited to formal education in schools with fixed timetables rather than to formal and informal education of adults which is less easily adapted to such a timetable and for which the potentially best hours coincide with peak viewing times.

Although portable, battery-operated television receivers do exist, a power supply is generally essential for television reception - which, in practice, means that vast regions are inaccessible to this medium. Moreover, the use of batteries would seem to be fairly expensive, particularly in the rural areas in developing countries, where it is not possible to guarantee regular reception for the reason that, among other things, there is no guaranteed supply of batteries. In tropical and equatorial climates there are also the problems of equipment maintenance and resistance to humidity.

The television receiver is still an expensive item, which means that its use on an individual basis, in particular for formal education and above all for non-formal education, is fairly limited in the case of developing countries. With regard to non-formal education, regular programmes or experiments have been conducted in Italy, France, the United States and Japan. In the case of developing countries, experiments have been conducted in Ivory Coast, Senegal, India and Salvador. Because of the cost of a television receiver, it should be added that those who own one are in fact those in least need of formal or non-formal education.

### 2. Integration of the medium and methods of use

Theoretically, television, like any other medium using the radio spectrum, is suitable both for individual or group use, for both formal and non-formal education. It can either replace the teacher entirely by providing lessons utilising

resources which he can neither provide nor elaborate, or increase his efficiency as a teacher by acting as his auxiliary. However, the practical experience acquired in the countries mentioned above tends to suggest that its utilisation is limited by the characteristics of the medium.

For example, although many experiments would lead one to believe that television can render the same services to education as a good teacher, the experiments in Indonesia and India in particular show that it is primarily useful in the context of formal classroom education and much less effective for informal adult education. Aside from the lack of flexibility already mentioned, there is also the question of age (children are much more fascinated by the medium than adults) and the question of programmes, which everywhere seems to have been an important aspect. For example, with the Krishi Darshan experimental project in India involving 80 villages, where the objective was to provide training for rural development, most of the viewers were children and the target audience, i.e. adult farmers, was not reached. The two reasons given to explain this failure were the low credibility of the programmes which were not sufficiently linked to local conditions and the boring nature of the films, due - apparently - to a lack of imagination on the part of the producers. The problem of programme credibility is, in most cases, even more acute when the film material is not made locally but imported from abroad.

3. Conclusions

If television is to be employed in rural areas, there is no doubt that it should be used only for formal education - at least initially. Subsequently, it should be possible progressively to use the schools' receivers (i.e. where there is an available power supply) for non-formal instruction. However, one must be certain to be able to produce realistic and credible programmes at a reasonable cost. It would seem that research should focus on this problem, i.e. how to produce non-formal educational programmes whose content and cost would warrant an extension of the television network in rural areas. The invention of the small video tape recorder, which can produce material relatively inexpensively, should encourage this type of use.

## CHAPTER 3

## THE USE OF RADIO FOR FORMAL AND NON-FORMAL EDUCATION

### 1. Technical characteristics

The current radio systems have many technical features which make them a very attractive proposition for formal and non-formal education in developing countries, particularly for rural areas. Their main characteristics can be summarised as follows.

There is a wide variety of radio systems - from inexpensive ones with a limited range to very powerful transmitters covering the entire country or even several countries. The costs of setting up a radio station have dropped considerably in recent years and a local transmitter can be set up for less than $5,000.

The invention of the transistor has made radio receivers inexpensive, flexible in use and independent of a fixed power supply. Battery operated radios are now available everywhere and transistor radios are easily transportable.

These two features combined have made it possible to reach vast audiences at relatively low cost.

From the educational point of view, radio has the great advantage over television in that the audience can be exposed to the same message several times a day through repeat broadcasts of the same lessons.

Lastly, in rural areas in developing countries, radio helps to offset the lack of an adequate road and communications network.

### 2. The use of radio for education

Nowadays, a great deal of the instruction in developing countries is given via the radio or with considerable assistance from the radio. The methods used and the purposes served vary considerably. The major ones can be classified in the following manner:

. Formal education:

- correspondence courses linked to radio programmes,
- teaching in schools (chiefly primary and secondary)
  - . either to reduce the pupil/teacher ratio or, on the contrary, to increase it,
  - . to vary the number of hours spent in the classroom,
  - . to enrich the lessons (i.e. by providing occasional lessons which it would have been impossible for

the teacher to prepare on his own or dealing with the more unusual kind of topic),

. to assist the teacher in his regular lessons,

- for teacher training.

. Formal adult education:

- compensatory instruction for drop-outs,
- correspondence courses,
- language courses.

. Non-formal adult and junior education:

- correspondence courses linked to radio programmes,
- as a support in literacy and numeracy campaigns,
- language courses,
- adult retraining.

3. Experience with educational radio

In the area of formal education, the following are the most common conclusions drawn from a vast number of experiments conducted, for the most part, in Latin America (Colombia, Mexico, Ecuador).

One conclusion was that radio, as an auxiliary, provides equally as good support for the teacher as does television but for a fifth of the cost. The only exception to this are types of instruction where a moving image is desirable or even indispensable, e.g. mechanical engineering.

In this connection, another conclusion was that, with the aid of radio, very acceptable performances can be achieved with widely different pupil/teacher ratios - these can in fact vary from 1/20 to 1/60 without any marked difference in the educational results. This is of particular interest in a situation where there is a need to reduce the cost of education, although there can of course be no question of radio's replacing the teacher entirely.

Radio also proved to be perfectly suited to formal adult education, regardless of whether it was used in conjunction with a correspondence course or not. For example, in the Mexican experiments, whose object was to enable primary school drop-outs over the age of 15 to complete their primary education, the examination results achieved were almost as good as those obtained by pupils who had attended school regularly. Similar

results were obtained in an experiment of the same kind carried out in Kenya and which included the use of correspondence courses. In addition, a good number of experiments carried out in Africa, Latin America and Asia have shown that radio is very well suited to the task of teacher training.

Generally speaking, as far as the education of pupils in the formal system is concerned, it would seem that the best way to use radio is as a means for achieving economies in teaching staff by taking advantage of the fact that it enables the pupil/teacher ratio to be increased. It would seem that this is the most effective way of using the medium, within a specific budget context, without this being construed as a reflection on the competence of the teacher himself. However, it is important to note that the successful use of radio for formal education is conditioned by very specific organisational factors which we shall be examining later.

In the case of non-formal education, the results vary enormously depending on the nature of the course, the level of the subject matter, its degree of abstraction and the system of supervision.

For example, where adults are concerned, radio constitutes a satisfactory method for transmitting information - it is therefore suitable for all types of instruction with a descriptive content, from agricultural techniques to hygiene and including such subjects as family planning and nutrition, provided that the level of the subject matter and the way the information is conveyed are appropriate to the type of culture and intellectual level of the target audience. Surveys have in fact revealed that subject matter which is too elaborate does not "get across" properly, if at all. However, more complex subject matters can be got across by radio when the medium is used in a group situation, supported by other more traditional media (posters, charts, etc.), under the supervision of a monitor and providing the group is properly constituted.

4. <u>The costs of educational radio</u>

More and more studies of the costs of educational radio are being published and, generally speaking, although the cost of a radio broadcast may not necessarily be expensive nowadays, education by radio or with the aid of radio may well be so.

Whatever the type of education, whether formal or non-formal, five categories of cost have to be taken into account:

Programming costs

These costs concern not only the planning of the broadcast courses and lessons but also their preparation together with the necessary written material. It is important to mention that broadcast courses need to be specially designed for the medium and cannot be merely a transposition of traditional classroom lessons. A special unit therefore has to be set up to prepare these courses and the greater the number of courses broadcast, the higher will be its total cost.

The cost of books

Except for certain types of non-formal education, broadcast courses have to be accompanied by written material for the students. A text book is normally reckoned to last three years.

The cost of radio receivers

The cost of a radio receiver is not very high but, even if the student can be expected to bear this cost since, in any case, he uses the radio for other purposes aside from education, there are still many cases where the authorities will have to reckon on providing receivers free of charge.

Transmission costs

These include the amortisation of equipment, technicians' salaries and the fixed and variable transmission costs.

The cost of training teachers and monitors

It is essential, both for formal and non-formal education, to make provision for the cost of training teachers and monitors. Where formal education is concerned, one or two training sessions lasting several days are an absolute minimum. In certain cases (e.g. Radio Sutatenza in Colombia) the training for monitors lasted more than a month. Where non-formal education is concerned, the amount of training (and consequently its cost) can vary greatly, mainly depending on the supervisors' and monitors' initial qualifications. If they have no special qualification as group leaders then the length of training required would seem to be generally about two months. In cases where it is possible to recruit supervisors who have already been trained in social or educational work (e.g. youth leaders, village level workers, etc.), the amount of training required and the

cost may be less. Aside from the item "preparation and programming costs" it would appear that the one most frequently underestimated is "training costs". Such underestimation is often at the root of interruptions to the teaching programme and a lowering of educational efficiency.

From the point of view of cost-effectiveness the fundamental comparison which has to be made is between the cost of training a student using traditional methods and the cost of training a student with the aid of radio. By the same token, the same method can be used to calculate the comparative cost of the various types of media used for education. In actual fact, it is not always possible to compute this, particularly in the case of non-formal education; however, it has often been done for formal education and teacher training. This has shown that radio's cost-effectiveness is much greater when the target audience is large and when the system of communications and means of transport are inadequate. Radio is therefore a first class educational tool for rural areas. Some figures show that, where there is a low population density, radio is worthwhile when there is a target audience of more than 3,000 within the range of the transmitter (a transmitter with a 12 km range). Over and above this level, radio can be an effective and economically attractive educational tool.

5. <u>Specific organisational problems concerned with the use of radio</u>

The use of radio for rural education raises several specific organisational problems which need to be taken into account when any new project is launched.

Experience has proved that the key to success in using radio for educational purposes lies in building up a competent and qualified staff for planning, preparing and programming the lessons to be broadcast. This means in fact putting together a genuine team for preparing the programme content so that there is an uninterrupted sequence of lessons. This team should comprise both teachers/educators and specialists in radio script writing. The success or failure of a venture in educational radio depends on this team. When several short-range (12-40 km) sub-stations are used, it is best to have a central unit for preparing certain types of courses which are then distributed to the sub-stations - the advantage with using short-range

transmitters being the possibility of supplementing the national, centrally prepared educational material by programmes dealing with local conditions.

The second decisive factor in the success of educational radio would seem to be bound up with the effectiveness of the co-ordination which has to be established between the Ministry of Education, the other ministries concerned with education, the Ministry of Information and the radio station (i.e. primarily with the team responsible for preparing and programming the educational broadcasts). Experience has shown that it is better to allow the members of this team comparative freedom in preparing the programmes, monitoring the results of their works, rather than to restrict their scope for action or supervise them whilst they are in the process of preparing the programmes.

There is one question with regard to organisation for which no satisfactory reply has yet been found, i.e. should educational radio use special channels or not? With special educational channels, the available broadcasting time is obviously much greater and there can be repeat broadcasts of lessons, which encourages a longer period of contact with the medium. On the other hand, it would seem that the use of special channels reduces the number of occasional listeners considerably. This would seem to be a fairly important consideration as far as non-formal, non-directive education is concerned. When educational radio is broadcast on the ordinary channels, the advantages and disadvantages are of course reversed. Such channels enable one to reach occasional listeners but the frequency and amount of time devoted to educational broadcasts cannot be as great as when special channels are used. The limitations imposed by the use of ordinary channels are greater than they would appear at first sight if one takes into account the question of the optimum broadcasting time (e.g. the intense competition for the evening "peak listening" hours).

The use of special channels would appear to be particularly justified in cases where:

- educational radio is used in combination with correspondence courses,
- the education is of a formal kind, e.g. compensatory education for primary school drop-outs,
- the object is to train instructors for non-formal, supervised education.

This type of education, of course, is aimed at audiences who are motivated and anxious to follow the courses.

On the other hand, educational radio using the ordinary channels would seem to be more appropriate in the case of:

- non-formal, non-supervised education, e.g. hygiene, nutrition, family planning, etc.,
- the teaching of foreign languages or "national" languages in multilingual countries.

It could be said that there is a certain contradiction between the range of transmitters and the need for special educational channels, i.e. if these special channels are to be economic, this presupposes a fairly large audience, but this is not easy to obtain with short-range transmitters - take teacher training, for example. On the other hand, it is difficult for short-range transmitters to perform the non-specialised functions of general broadcasting. Each case, in fact, has to be decided on its merits as a compromise between the times of transmission available with small stations and the range of the transmitters. At the same time it has to take into account the calculation of the size of the target audience and the cost of devising and preparing programmes for non-specialised transmitters.

## CHAPTER 4

## THE USE OF FILM (16 mm, 8 mm, Super-8) FOR RURAL EDUCATION

### 1. Technical characteristics

The technical characteristics of cinema film condition to a great extent the possibilities of its use for rural education as well as the manner in which it can be used. Educational films, perhaps more than any other medium, pose complex problems for developing countries, e.g. the projectors for 16 mm, 8 mm or Super-8 require a power supply. Nowadays, the use of mobile generating sets or van units overcomes this problem to a certain extent but it does nothing to eliminate the other problems created by the technical requirements.

For example, projectors are complex machines, e.g. they require maintenance and a permanent supply of spare parts (in particular bulbs and fuses). Their use, particularly in the case of 16 mm projectors, requires the presence of a "specialist" responsible for maintenance and the provision of spare parts.

The message carriers, i.e. the films, have to be physically dispatched and periodically renewed.

Film-making is a complex, expensive and relatively slow process, requiring a large number of specialised technicians (ranging from the camera-man to the sound engineer and including editors, etc.). It implies substantial capital outlay for processing laboratories, editing rooms and mixing studios. Countries which are unable to make their own films have to rely entirely on imports from abroad.

And lastly, film projectors are a very expensive investment - at least as far as 16 mm projectors are concerned. Geoffrey Bell (Unesco, Reports and Papers on Mass Communication) has shown that a 16 mm projector can often cost as much as a school building or the contents of a public library.

### 2. Problems of adapting the medium to local needs

Teachers who wish to use films as aids want them to be better suited to their local needs. However, in most situations at present, it is difficult to comply with such a request on account of the extremely high costs involved in making a film for a limited audience, not to mention the costs of distribution.

In view of this, adapting a film to a particular need will only be feasible when this need is fairly universal. Linguistic barriers are another obstacle to adapting films to suit local requirements - subtitling or dubbing creates complex problems of a practical, financial and organisational kind. Many developing countries have not the necessary resources to subtitle or dub the films which they import themselves.

In addition, dependence on imports from more developed countries sometimes raises the problem of subservience and cultural dependence. To this must be added the difficulties of checking the content of films prior to purchase or hire.

3. The scope for using films in rural education

In view of the foregoing remarks, it is apparent that educational systems based on the use of films are primarily suited to regions with a power supply, properly designed school buildings and which can, if necessary, provide technical staff for the maintenance, repair and operation of the equipment. In view of the cost and complexity of this equipment and the problems involved in obtaining a supply of films, this medium is less suited to small, scattered rural schools than to the larger schools in semi-urban centres. Consequently, the medium is more appropriate for secondary and technical education which, in most cases, is concentrated in these semi-urban centres.

In view of the difficulties involved in adapting films to suit local conditions (problems of credibility and language), the medium would scarcely appear appropriate for non-formal education of a non-supervised or lightly supervised kind.

Film is much more suited to convey either general information or highly specific technical information, e.g. technical schools (teaching mechanical or electrical engineering, boiler making, etc.) can derive great benefit from the use of films conveying data of a technological kind - they can be used every year for the same grade. On the other hand, in the case of agriculture, since conditions vary greatly from one region to another, the medium is of less direct value. However, because of its usefulness as a vehicle for precise technological information, varying little from region to region, it may prove worthwhile to design and order specific films and dispatch a number of copies to the institutions responsible for this type of education.

As far as non-formal, rural education is concerned, the film medium can be used primarily in one of two ways. The first way, which is rarely used, consists in distributing educational films to public cinemas, wherever these exist in rural or semi-urban centres. The second method is to disseminate filmed information by means of mobile van units which have their own generating equipment. Many audio-visual centres throughout the world use such mobile van units. However, experience has shown that this method, although attractive at first sight, can prove fairly expensive. In fact, this method is really only suitable for very general films or to support specific development aims once the requirements have been accurately identified - in which case, this implies making the films on the spot.

4. Planning and organising the use of educational films

Because of the somewhat unwieldy nature of the medium's, its use requires careful planning. Film is the classical example of a medium which needs to be centrally managed and planned so that it becomes easier to solve the major organisational problems - of which the first is access to the medium.

It is rarely possible, because of the cost, for schools to build up their own film library - except in the case of technical schools and some secondary schools, which can make frequent and repetitive use of the films they may have. As a result, it is very common to find a system of borrowing or hiring films from an audio-visual centre. This means that access to the medium is one of the major organisational problems. In fact, when a teacher wants to use a film, he has either to order it from the national audio-visual centre or from abroad - which generally involves a considerable amount of time and which presupposes that he knows what is available at the film libraries. This in turn presupposes the creation of an information service which, in most cases, would be attached to the national audio-visual centre.

In these circumstances, it is obvious that success in organising the use of films depends primarily on having a well organised central service whose basic function is to procure, assess and distribute films originating mainly from abroad.

The central management of films and equipment would seem all the more essential in view of the fact that the most important problem, after that of regular and smooth access to the medium, is the lack of parts, spare fuses and lamps for the projectors; centralised stock control should also enable one to overcome such problems as motor failures, etc.

In fact, film would appear to be fairly unsuitable as a medium for formal and non-formal education in rural areas because of the complex problem of creating credible messages, the difficulties of distribution and the relatively high cost of projection equipment, film stock and filming itself. On the other hand, as a method for disseminating knowledge and information of a general kind, it has a substantial part to play as a window on the modern world, with all the social implications which this invariably entails.

# CHAPTER 5

# SLIDE PROJECTORS

## 1. Technical characteristics

A slide projector is a fairly simple apparatus, easy to use and easy to maintain in a non-technical environment. However, the supply of spare parts (mainly special lamps and fuses) may be a problem, although less acute than in the case of film projectors. It should be added that slide projectors are easily transportable and relatively inexpensive.

The message carrier, i.e. the slide itself, is of a light material which is less fragile than film and, above all, less expensive to produce. The experts consider that, in general, slides work out at less than one-third of the cost of film for a comparable quantity of information. A good quality projector can reproduce an excellent colour image.

One of the fundamental features from an educational point of view is that slides are easy to reproduce and for a much lower cost than films.

The more modern types of slide projector can be coupled with audio cassette players. Naturally, a slide projector requires a power supply - either from the mains or from a generating set. In view of their relatively high power off-take, it is practically impossible to envisage running them off batteries.

## 2. Applications

The technical features of the slide projector make it a very flexible teaching aid: since its main function is to transmit visual information and enrich the teaching content of a course, slides can be used for both formal and non-formal education.

Where formal education is concerned, slides are particularly appropriate for geography, history and science courses and any other type of course where visual perception can increase assimilation of the subject matter.

Where non-formal education is concerned, the fact that the slides can be made in situ helps enormously to increase the credibility of the medium. A further great advantage with slides is that the teacher can adapt the level of his commentary to his audience's level of assimilation and what they already know. A common practice nowadays is for every set of slides to be accompanied by one or two roneoed sheets of commentary, which the teacher can supplement and adapt to his own needs.

A particularly important use for slides is in the training of technicians or teachers, using sets of slides specially made for this purpose.

3. Ways of using and organising the use of slides

The two major organisational problems involved in the use of slides are procurement of the slides themselves and their distribution.

The slides can be procured in two ways. One way is to order one or more sets from abroad - this is the only way where subjects outside of the geographic area of the user country are concerned, e.g. certain aspects of geography, history, art and other subject matters. In certain cases, this same procedure is also unavoidable when it is a case of providing visual information on things which do not yet exist within the country, e.g. special technical subjects. And lastly, in some instances, even when it is technically possible to produce the slides within the country, it may be more advantageous to order them from abroad in view of the technical and financial facilities available to certain centres of production (e.g. specific scientific subjects: chemistry, physics, etc.).

If the intention is to make regular and fairly wide-scale use of slides for formal and non-formal education, then the system of ordering from abroad implies setting up an audio-visual centre to centralise orders and keep abreast of what is available or where it can be produced.

With regard to the possibility of producing educational slides locally, two aspects have to be considered. In most developing countries, there is no technical problem involved in taking slide photos, but the preparation of sets of slides requires close collaboration between teachers, the future users and the photographer. This is particularly true in the case of slides for use in non-formal education and dealing with specific development objectives - agriculture or whatever - which depend to a predominant extent on local conditions.

The second aspect concerns processing, editing and printing copies. Certain countries do not have the laboratory facilities for colour processing and printing copies - in such cases, these operations have to be done abroad and this takes time. If it has been decided to make regular and wide-scale use of

educational slides, then it may be thought necessary to set up a central photographic laboratory to handle the country's requirement, although it must be remembered that this laboratory will still be dependent on outside sources for the raw material required for processing slides. Modern colour processing techniques have resulted in a very substantial reduction in the cost of equipment and immensely simplified the operations involved. In any case, the technical problems involved in setting up and using such laboratories bear no comparison with the problems involved in setting up and using laboratories for processing film.

Similarly, although it does create organisational problems, the distribution of slides to users causes infinitely less headaches than the distribution of cine-film. In view of the low cost of a projector and its simple operation, the obvious solution would seem to be to provide schools and non-formal education centres with their own apparatus so as to avoid all the unnecessary organisational problems involved in loaning or hiring out equipment. The same applies with regard to the provision of sets of slides although, in certain cases, where there is an efficient postal system, one can think in terms of setting up a lending service. In which case, if such a service is to operate smoothly then the audio-visual centre must keep its customers regularly and fully informed of what is available.

Conclusions

It would seem that, wherever there is a power supply available, slides as a visual educational medium (or as an audio-visual medium, with the addition of a synchronised cassette player) are very flexible, inexpensive and easy to use for a wide range of subjects. When one is planning to make use of visual media on a fairly wide scale, one should first of all ensure that maximum use is being made of slide projection before introducing film or television. It is in fact quite likely that slides will prove to be the most cost-effective of all the visual or audio-visual media.

## CHAPTER 6

## CASSETTES AND CASSETTE PLAYERS

1. Technical characteristics

Cassette players and cassettes themselves are a highly suitable medium for rural education in developing countries. The equipment available nowadays is extremely reliable, simple to operate and robust. In addition, it can work off batteries and is very easily transportable. Because of its low cost, it can be used for group as well as for individual instruction.

It is extremely flexible with respect to the times at which it can be used and the amount of exposure to the medium, e.g. the messages can vary in length from a few minutes to two hours.

With cassette machines with a playback/record capability it is possible to use a two-way system of education, i.e. the listener can record answers to questions on the reverse side of the tape or ask questions himself. Naturally, it is essential to have a reliable postal service if this "feedback" system is to operate properly.

2. Applications

It would seem that audio-cassettes are relatively little used in formal education, aside from the teaching of foreign languages where they are used in relatively sophisticated and well equipped "language laboratories". By contrast, they have been and, in fact, still are widely used in adult education for a broad range of technical subjects, e.g. they have been used in India for agricultural training, in Pakistan as aids in training midwives, in Taiwan for industrial training as well as in Ecuador where they were used as the vehicle for a "feedback" system with the radio stations.

Mention should also be made of the fact that the audio-cassette system, like radio, is particularly suitable for illiterate or semi-literate audiences.

The advantages of this medium are as follows: the receiving conditions can be controlled by the listener himself - for this reason, it is one of the most flexible media available, particularly since it can be used by an individual listener. Times of listening can therefore be chosen to suit local conditions.

The audio-cassette is, without doubt, the easiest and cheapest medium for conveying messages to highly local target audiences: the use of local dialects presents no problem and messages can be made extremely credible by referring to local conditions when conveying information.

In addition, the fact that it permits individual listening means that intimate subjects such as birth control methods can be dealt with, whereas this would be impossible with a mass medium like radio.

3. The main organisational problems

The chief problem in using audio-cassettes as a vector of education is that of designing and preparing the messages. As in the case of radio, if there is to be widespread use of the audio-cassette as a support for formal or non-formal education, then it is essential to set up a team to plan and prepare these messages. This team should not concern itself solely with the simple problem of recording information - it should also be aware of and take into account the specific location and nature of the target audiences. This requires that surveys and studies of local conditions be carried out prior to the preparation of the messages as such. In addition, the need to assess the impact of these messages as well as the need continually to adapt the message to suit requirements more often than not means having a permanent staff available locally to supervise adult education, their function being not only to provide information on local conditions prior to the preparation of the messages, but also to act as monitors and evaluate results on a continuing basis. These monitors are generally the local agents of the government departments using the medium, e.g. local agents of the Ministry of Health, Ministry of Agriculture, etc.

The very flexibility of the medium makes it imperative to assess its impact on the target audience. In addition to the local presence of monitors, some experiments have been based on a two-way exchange of information. Not only does this system provide a better on-going evaluation of the impact of the messages - at least as far as the practical aspects are concerned - but, in addition, it is designed to avoid centralising education by encouraging listeners to participate in their own training.

The basic problems which have to be faced when using this system are, firstly, the existence of a reliable postal service or other means for dispatching the material and, secondly, having sufficient staff available to deal with the messages sent back by listeners. Setting up a team capable of handling substantial quantities of cassettes means adding a far from negligible amount to the total budget.

A practical consideration in the use of audio-cassettes for mass education is the availability of reliable and efficient duplicating equipment - nowadays, one can buy high-speed cassette duplicating machines but they are fairly expensive.

## CHAPTER 7

## VIDEO TAPE MACHINES

Since the beginning of the 'seventies, there has been quite a craze for the use of small "video" for education in rural areas. The reason for this craze is that video, despite a number of drawbacks, is practically the only small medium available today which combines both moving picture and sound. Since video machines can operate on batteries, they are in fact independent of a fixed or cumbersome source of power such as mains electricity or generators. In addition, video/tape has a certain autonomy of production in that it can be used on a mobile basis both during filming and projection. The audio-visual tape can be played back as soon as it has been recorded or after a fairly simple editing process. Video not only combines in one machine all the advantages of a cassette recording and playback device and polaroid film, but offers more. The polaroid cine-camera, which has just recently been brought out, would appear to be the only device capable of competing with small video equipment.

1. Technical characteristics

Battery operation is possible but only for short periods - for prolonged use, one needs either a generator or a mobile van unit.

Unlike film, no processing facilities are required and the tapes can be viewed as soon as they have been recorded. It should however be pointed out that the recorded material may often prove disappointing unless it has been made by a skilled professional.

In theory, video is easy to use but, in fact, in the hands of an inexperienced operator, the results may often be unsatisfactory.

Video tapes are relatively inexpensive and can be reused many times. The image is not as good as with film. Up to now, colour video machines have tended to be fairly cumbersome and more tricky to operate.

Electronic editing of video tapes avoids waste and it is less complicated than film editing but it means having a second machine, which adds to the expense.

Certain types of tape (the ¾-inch variety) can be screened over the open television network.

Video equipment is fairly fragile - it is affected by damp, dust, shocks and careless handling. Maintenance is fairly complex and more expensive than in the case of film equipment.

Mention should also be made of the lack of standardisation of equipment which causes serious problems of compatibility between machines. Add to this the fact that, in developing countries, one rarely finds a distribution network with the result that an enormous amount of time is required to obtain spare parts and even tapes.

2. Applications

The primary area of application for video taping in the rural areas of developing countries is non-formal education - practically all the classic themes have been recorded and screened on this medium, e.g. family planning, farming techniques, hygiene, work organisation, etc. It has been used not only to train mixed groups but to reach more specific audiences, e.g. training of midwives, social workers, family planning agents, agricultural extension workers and others.

The inherent advantages of the video system, i.e. the fact that material can be viewed immediately after taping, make it an ideal medium for instantaneous intervention or group motivation and for tasks such as community development or "conscientization" (Brazil).

The same features make the medium ideal as a means of two-way communication - the experiments in Alaska and Ivory Coast using "video letters" are a good example of this. Villages were able to express their point of view, communicate this to the authorities in charge of development and receive a recorded reply to their questions. This system however can sometimes create considerable political problems in that the recorded comments and discussions can very often amount to thinly disguised criticism of the government.

3. Organisational problems

The numerous experiments which have been carried out so far have served to highlight a number of recurrent organisational problems. Some of these are of a truly technical kind and have already been referred to, e.g. the question of a power supply

concerns not only its availability but also variations in voltage to which video machines are very sensitive. The problem of maintenance and spare parts is a particularly difficult one to overcome in countries where practically no distribution network exists - some aspects of maintenance which would present no difficulty in an industrialised country can, in developing countries, paralyse use of the equipment for months at a time. And lastly, the need to have qualified technicians to handle this equipment means that it is unrealistic to expect that the local people themselves will be able to operate it. All the attempts to "democratise" the use of this medium, with all its definite advantages about which there is little dispute, have tended to prove how unsatisfactory "amateur" video taping can be for educational purposes. This means therefore that there is a problem of training skilled technicians - this is not merely a matter of a few weeks' training to teach someone the basic mechanical operations but to impart a certain skill in the use of the medium so that information is expressed and got across effectively. This is no easy task - and certainly a long one. Other problems are of an institutional character, i.e. the video tape recorder is a machine which cannot be used otherwise than in an institutional context since, for technical and financial reasons, it cannot be used on an individual basis. This immediately raises all the problems of official support, co-ordination and the manner in which the medium is to be used. In practice, it would seem fairly apparent that, in an official context, it is difficult to exploit the medium's potential to the full on a regular basis for socio-political reasons and the tendency is to use it as a substitute for film, i.e. material is devised and created and circulated in the same way as 16 mm films. However, even here, the medium's ability to capture situations which are highly local, specific and in a local dialect means that such material is often unsuitable for use other than in the locality where it was filmed and recorded. As a result, the target audience is necessarily limited, which implies that the cost of production per individual member of this target audience is relatively high. Lastly, there are fairly considerable problems connected with the supervision of those taking part in the

recording or viewing sessions, such as providing group leadership, organising follow-through activities or preparing a response in the form of a video letter. Several experiments of this kind have failed because of the supervisory staff's lack of experience or ability.

To sum up, it would seem that the use of video for rural education raises problems which are both extremely complex from a technical point of view and delicate from a socio-political standpoint. To this extent, whilst careful experimentation should continue in this area, it should be based on the idea that video is not a project in itself but a possible adjunct to an existing system of teaching and, moreover, one which should not be regarded as indispensable. What is in fact indispensable is that educational and development projects should not be made dependent on media which are as delicate from a technical and social point of view as these video systems.

## PART II - THE ORGANISATION OF AUDIO-VISUAL CENTRES

When it is a question of using audio-visual aids in education on a massive and widespread scale, one may well have to cope with serious organisational problems. The efficiency of these media will however suffer if no solutions are found to these problems or if the solutions prove inadequate. To convince oneself of the truth of this statement, one needs only to outline the basic tasks which an audio-visual service has to perform in order to ensure that these generally expensive media are used with optimal efficiency. A national audio-visual service, covering the entire country, has normally to perform the following tasks:

- to promote, produce or import and evaluate the audio-visual equipment required for education;
- to manage this equipment on either a centralised or decentralised basis and, in both cases, make this audio-visual equipment available to the educational centres concerned;
- to draw up an overall short, medium and long-term policy for the use of audio-visual media in close collaboration with those responsible for education (which does not necessarily mean only Ministry of Education officials) and, where appropriate, with the centres of radio and television production and transmission, which may well be units separate from the audio-visual services as such.

These tasks, and others too, form part of a certain number of functions which we will be analysing in detail when we come to examine the question of an audio-visual service's internal organisation.

## CHAPTER 8

## INTEGRATING THE AUDIO-VISUAL SERVICES WITHIN THE EDUCATIONAL SYSTEM

### 1. Why the service needs to be an integral part of the educational system

Although each country has its own particular needs with regard to audio-visual media, based on the results of numerous recent experiments it is now a generally accepted fact that, if the use of media for education and rural education in particular is to be effective, then this means setting up a special service functioning as an integral part of the overall system of education, i.e. a special service as opposed to improvisation and absence of planning and an integral part rather than a parallel function.

If, on the one hand, the use of media for formal or non-formal education is left entirely to local initiative - whether this be with regard to the choice of media or the manner in which they are used - the risks of organisational inefficiency are considerable: the problems can range from difficulties in obtaining supplies of message carriers (i.e. films, cassettes, etc.) to maintenance and the supply of spare parts, in addition to the problem of a regular source of funds.

But, on the other hand, when a genuine service exists to organise the use of such media but without their content being defined in close collaboration with the users (which implies an integration within the education system on a policy-making and organisational level) there is every chance that this will cause widespread problems as far as relating the media to educational needs is concerned.

The size of an audio-visual service and the way it is integrated within the educational system will, of course, depend to a large extent on the importance assigned to audio-visual media in education. If, as was for a long time the case in developing countries, it is merely a question of periodically distributing a few films or slides to certain schools, there is no need to set up a special service on a national level to do this - any department within the Ministry of Education could handle this on an occasional basis. By the same token, there are a number of cases where private initiative, generally denominational, has been successful in providing the schools under its authority with an audio-visual service which is perfectly satisfactory from the

organisational point of view - which would tend to prove that organisation is not necessarily a synonym for state control.

Lastly, where one is concerned with highly localised pilot or experimental projects, it is perfectly obvious that there is no need whatsoever for a central government service - on the contrary, in such cases the media aspect is always organised and controlled at the appropriate local or regional level.

It would seem that the problems related to the general organisation and integration of an audio-visual service within the education system are mainly of two kinds: first of all, structural, i.e. what place should such a service have in the administrative structure?; secondly, financial, i.e. what methods of funding and what degree of autonomy are mostly likely to ensure the efficient operation of an audio-visual service?

2. Overall organisation and integration of an audio-visual service within the education system

In most of the developing countries which have an audio-visual service on a national scale, this has grown up within the or one of the Ministries of Education and has become a special department or service. Very often it was originally the service which supplied the traditional teaching aids (e.g. wall charts, posters, adhesion boards, etc.) and has progressively developed into an audio-visual service without necessarily abandoning its previous functions. Sometimes, a specific audio-visual service is set up within the Ministry of Education. In both cases, the audio-visual service is integrated administratively within the education system by virtue of the fact that it operates within a department like any other ministerial service. However, other systems do exist, e.g. some audio-visual services operate outside of any ministry in the form of an Independent Foundation either funded by the state, privately financed or jointly financed. Such foundations may be either completely or only partially profit-making bodies. Aside from these two systems, one sometimes finds audio-visual services which are state undertakings but administratively and financially independent - these are, or have the same status as, services which have been subsequently brought under state control. The prototype for this type of structure

is the "National Pedagogic Centre". In both cases, the audio-visual system is integrated within the education system either by setting up permanent machinery for administrative co-ordination or by means of a contractual agreement for the supply of services. An important fact to note is that the existence of an audio-visual centre, whatever its administrative form, does not mean that the centre itself controls and manages all the audio-visual media which may be used for educational purposes, e.g. separate management is almost always the rule in the case of national radio or television which are only partially used for education. In such cases, systems of administrative co-ordination and co-operation or even contractual arrangements are drawn up.

3. The major problems concerned with integration

There can be no question of advocating any one specific form of structural integration for an audio-visual system within the education system - this will depend in each case on local factors, the historical context and often the circumstances of the moment. However, from a broad review of the experiments conducted throughout the world, it is apparent that two major types of problem can occur in varying degrees depending on the solution adopted.

It is often the case that the activity of an audio-visual service is hampered by the bureaucratic rules and regulations which apply to the government departments of which they are part - in particular regulations governing the authorisation of expenditure, the need to refer decisions to higher authority and, on a general level, the highly centralised character of educational administration in developing countries. One often finds that audio-visual services do not have sufficient administrative and financial autonomy to enable them to operate smoothly - this is almost always the case where there is control of decisions before they are made rather than after.

The one shortcoming of a purely organisational kind which is most frequently mentioned in the experiments for which evaluation reports are available is the lack of co-ordination between the various agencies working together on the media project, i.e. the Ministry of Education, the service transmitting the messages (radio and/or television), the technical units

responsible for devising, planning and preparing the programmes, the other ministries which already have their own educational programmes (in most cases, the Ministries of Agriculture and Public Health), the postal service, etc. These shortcomings, which may have serious consequences and sometimes even nullify the effect of using media for educational purposes, are the result of a variety of factors which often have no direct connection with the problem of using a system of audio-visual support as such, e.g. inter-departmental rivalry, the setting up of co-ordinating bodies at inappropriate levels as the result of a tendency to over-centralise the decision-making process; this also occurs when there are conflicts of administrative authority or between public services as well as when some of the organisations which have to co-operate with the audio-visual service are themselves not very efficient. In this connection, one could even go as far as to say that the efficiency of an audio-visual support system for education is in fact the result of the combined efficiency of the individual organisations and agencies co-operating with it to achieve its goals. The greatest attention should therefore be paid to the type, form, level and powers of the co-ordinating bodies and the procedures set up to ensure the smooth operation of the audio-visual services, for it is at this level that the most serious organisational bottlenecks seem to occur.

It is important to point out that revealing defects in the administrative structure and location of an audio-visual service should not necessarily be the signal for fundamental changes - experience has shown, in fact, that the disruptions caused by radical changes and administrative reorganisations can often create worse problems than an attempt to reform an existing system which has been in operation for many years.

4. Financial sources and methods

A key factor in the efficient operation of an audio-visual service is that it should be assured of an adequate and regular supply of funds. The studies carried out in most of the developing countries show that, with very few exceptions, this lack of funds is general and that it is one of the main reasons for a loss of efficiency. In this connection, a distinction has to be made between the initial capital outlay and the fixed expenses on the one hand and operating costs on the other. Nor, from the point of view of an overall economic assessment, can one overlook the cost of setting up appropriate facilities for reception of the messages delivered by the media, particularly where non-formal education is concerned. Experience has shown, for example, that what has been frequently overlooked in the plans for financing such projects are the ancillary costs of training teachers in the use of these media, the training of monitors for non-formal education, etc., whilst all the attention was being focused on the investment and the operating costs for the equipment as such.

The capital outlay and the number of technical personnel required may vary considerably depending on the type of medium used, but, for every medium there is a minimum level of investment and fixed expenses below which underemployment of capital is unavoidable as the result of imbalance between the component parts of the project. For example, one frequently finds expensive and elaborate equipment in audio-visual centres which cannot be put to full use because of the lack of sufficient, trained technical staff. This is an ever-present danger even with the most carefully planned projects where these minimum requirements and the balance between component parts have not been overlooked - either because the staff required is simply not available or because there is so much outside competition for trained staff that this causes an "exodus of technicians" from the audio-visual services, e.g. the substantial salaries paid in some of the Arab Gulf states seem quite literally to drain other eastern countries of their audio-visual technicians since they are unable to offer them anything like the same conditions.

Although it is not always a question of finance, many writers mention the problem of technical and financial dependence on foreign countries, which can occur in the case of certain major audio-visual projects. In this connection, the Dakar Conference on "educational teaching materials" held in 1975 urged that countries should strive to become self-reliant.

Often, the weak point in a project concerning the use of audio-visual media for education is the question of operating expenses - the sources of funds to cover these are generally unreliable and it is difficult to forecast their amount beyond the short term and this in particular affects the ability to plan a concerted development of the auxiliary services to be provided by these audio-visual media. Delays in obtaining the necessary resources is invariably one of the most frequently mentioned reasons for a loss of efficiency and, above all, for an increase in costs.

Finally, and this is the last major problem of a general nature, the expenditure required to cover the ancillary costs involved in the use of media is almost always underestimated and sometimes simply overlooked. The lack of funds to cover such costs can prove to be a substantial obstacle, e.g. when it came to extending the non-formal radio education project in India (Radio Poona), the lack of funds for training group leaders for the village forums certainly reduced the effectiveness of the medium because, out of the 25,000 forums planned, it proved impossible to set up more than 12,000.

## CHAPTER 9

## THE MAIN FUNCTIONS OF AN AUDIO-VISUAL SERVICE

The use of communication media on a wide scale as a support for education means organising and setting up a number of essential functions. The most important of these are: planning, production of the material, distribution, the training of teachers and technicians and research and development.

### 1. Planning the use of the media

Planning is a central function which covers and directs all the other functions. It implies the setting up of a national planning committee in which all the agencies supplying or using the audio-visual services should participate, from the Ministry or Ministries of Education to the Ministries of Agriculture, Health, etc.

For the most part, the problems which require the greatest attention as far as the process of planning and forecasting is concerned, are common to nearly all developing countries, i.e. a shortage of funds, a lack of teachers and qualified technical personnel, a shortage of equipment and maintenance facilities, the problem of a power supply and a lack of adequate means of communication and transport. In this context of penury, one of the most common errors and no doubt the one with the most serious consequences is the duplication of resources - for example, it very often happens that several ministries each develop their own audio-visual service and select media support systems of a widely differing kind. Aside from the problems caused by the dispersion and variety of this equipment as well as by the lack of standardisation, this way of operating generally results in a substantial loss of efficiency as far as the technical staff is concerned and a considerable increase in operating costs. It is obvious therefore that a single audio-visual centre should be in charge of the overall co-ordination and planning of media projects. This centre would also be responsible for evaluating imported material and equipment, carrying out tests and drawing up import schedules including ones for the import of spare parts and maintenance equipment.

2. Production of the material

The task of producing the material is by no means an easy one to undertake, but it is an essential one. It is widely recognised that information material, audio-visual messages, which are not produced in the country itself and sometimes even at the spot where they are to be used are, in many cases, ill-suited to the purpose for which they were intended - except of course in the case of very general programmes. As a result, the import of material, which is unavoidable in the case of most countries, needs to be carefully planned - this would seem to apply particularly to educational cinema and television films.

It is important therefore to adopt a positive attitude with regard to national production of audio-visual messages so as to ensure that the country's real needs are catered for, that local cultural values are respected and, above all, that dependence on foreign sources is lessened.

Initially, production could be concentrated on non-electronic teaching aids such as models, felt boards, charts, posters, etc. - which are neither expensive nor complicated to produce. Then, subsequently the centre could begin producing audio-visual messages for cassette recorders or video machines, pictures for epidiascopes, etc., and, in a final stage, it could undertake to make 16 mm or Super-8 films or even 35 mm films and audio-visual tapes for television. A carefully planned scheme for the training of technicians is an essential part of any long-term programme to produce material for communication media. But, it is essential not to lose sight of the fact that making 35 mm and 16 mm films and video tapes requires a substantial capital outlay (processing laboratories, editing rooms, mixing studios, etc.). Investment will only be justified if the production of audio-visual material is sufficient to allow reasonable amortisation of the equipment. However, it is often the case that countries which possess such equipment under-utilise it, less as a result of a lack of technicians than because of financial restrictions with regard to the operating budget and, above all, because of the lack of competent programme and film producers. As all the surveys have shown, the varying degrees

of amateurism in the production of films, video and television programmes is a major cause of their low educational impact - once the novelty has worn off, teachers as well as students tend to lose interest because the material is badly designed, boring and repetitive. If these big media are to be used effectively then this means creating a genuine audio-visual climate, which is not something which can be done rapidly or from nothing - this is why one needs to plan carefully a progressive development of local production over a sufficiently long period whilst, at the same time, maintaining imports so that there is enough time to train local technicians and producers.

3. Distribution and technical services

Where audio-visual media are concerned, the question of distribution is certainly one of the most difficult to solve - generally because of the lack of transport, the slowness of the communications system and the unreliability of the postal service. The choice between whether schools purchase or rent their audio-visual equipment will depend on how serious the distribution problems are in that particular country. Although the purchase of films, cassettes, records or slides may seem at first sight more expensive than renting them, on the other hand, this limits the number of transport or postal operations and supply delays and means that the same material can be used from one year to the next. The main disadvantage with the system of individual ownership, aside from the expense involved for the school, is the vast number of copies, required in view of the fact that the material does not circulate. In certain cases, a mixed system would be possible, i.e. purchase of the less expensive types of material (e.g. cassettes) and hiring of films. This system would appear to be particularly appropriate where there is a need to decentralise operations, especially in large countries, which would mean setting up provincial audio-visual sub-centres. In such cases, these sub-centres could not only distribute audio-visual material but also produce some of this locally. In any case, setting up a good distribution system is a slow and expensive process and, if this distribution system is to be fully effective, it needs to be combined with an information or even a demonstration service.

Where the cinema medium is concerned, one needs to point out the advantages of using, whether it be for formal or non-formal education, mobile van units with their own generating sets. The use of such units, if carefully planned, enables intensive use to be made of the material available and reduces the number of copies required for a given film whilst maximising the number of people who will be able to see it.

It is essential for audio-visual centres or sub-centres to have adequate technical services whose task will not only be to carry out maintenance and supply spare parts but also to train people to operate the equipment, either via courses or on-the-spot demonstration. Experience has shown that one of the main obstacles to an uninterrupted use of audio-visual equipment is often the lack of spare parts, e.g. a film projector may be out of action for a considerable length of time merely for want of a bulb. Thus, there is every reason to stress the importance, when the contracts are being signed for the import of such equipment, of including provision for the future supply of spare parts and, above all, earmarking resources to cover the cost of stocks and maintenance right from the start of the audio-visual project. In this connection, one needs to remember that spare part prices are usually very high, that supplies may be suddenly interrupted when new equipment is being put into production and, perhaps even more important, that some equipment will, during its useful life, require an investment in spare parts equivalent to 25%-30% of the initial purchase price.

4. The training of teachers

The training of teachers involves not only giving them a brief technical explanation of how to operate a new form of teaching aid (e.g. audio cassettes, film projectors, video machines, etc.) but, even more important, to inculcate a new teaching method. It has been widely noted that there is often considerable resistance to the use of modern media in education and, if a new medium is to become an accepted feature of the educational scene, it is essential that an effort be made to motivate and convince those who are most directly concerned. The question of training teachers and monitors in the use of audio-visual media is of particular importance when one is planning to set up a system of intensive training for adults.

## 5. Research and development

One of the responsibilities of an audio-visual centre is to carry out regular research not only on the technical quality and performance of the media but also on their effectiveness from a teaching point of view. It often proves difficult to evaluate projects due to a lack of research or insufficient research. What is more, the lack of information on existing technologies and international as well as national experiments may result in out-dated techniques being used often on the purely hypothetical argument that such equipment is simpler and sturdier. However, the most striking conclusion is not so much the absence of research or experiment than the incorrect or exaggerated extrapolation of results. In fact, numerous local experiments or pilot projects have been carried out in developing countries in connection with the use of communication media for education; from the technical point of view, valuable lessons have been learned from these experiments, but errors of judgement (sometimes very substantial ones) have been made with regard to the possibilities of applying these on a wider scale. There are two main reasons why the success of these pilot or highly localised projects is rarely repeated when the same methods are applied in a wider context. The first of these is that there is a very marked tendency to allocate financial, human and material resources to a pilot or experimental project on a scale far in excess of what would be possible in the case of a more broadly based project. In fact, although pilot projects can provide valuable information on the technological aspects involved in the use of communication media, they very rarely constitute a "small-scale model" of what the full-scale project would be like as far as total resources are concerned. It is thus important to take a close look at the resources employed in these experimental projects so as to be certain that these are an accurate reflection of what a larger-scale project using the same technology would be.

What is more, it is rarely possible to reproduce the same methods of organisation as those used in a pilot or experimental project, i.e. the difference of scale between a local project and a national project considerably modifies the organisational parameters (e.g. administration, co-ordination, transport,

means of communication, etc.) to such a degree that substantial problems may arise even when it would seem that the systems set up were satisfactory. One needs to emphasise the fact that, because of the experimental nature of certain projects to incorporate audio-visual media into the system of education, they provide information primarily on methods of organisation.

## CONCLUSIONS

When one reviews the existing literature on the use of communication media in general and in particular for rural education, one is struck by the continued scarcity of studies to evaluate their effectiveness. In particular, there are very few cost-benefit analyses. In our view, this situation is not merely evidence of a lack of research or theoretical analysis - it would seem to us to be more related to the fact that modern media, although that they are very powerful instruments, cannot be considered as an independent element within the teaching/learning process. They are in fact one of the constituant elements of an educational system and, as such, are difficult to isolate from the others, e.g. just as it is difficult to isolate the role of the blackboard and chalk in the teaching process, it is difficult to isolate the role of radio in relation to the other components in the system. This in itself explains the difficulties of making an evaluation - at least, a quantitative one. At best, one is usually only able to make qualitative comparisons between the various media utilised or utilisable. As a result, one notes that the factors generally considered as deciding the success or lack of success in the use of media are those related to the planning and financial aspects, the factors concerning the technical potential of the media themselves, those relating to the context in which they are used and, lastly, those concerning the organisation of the target audience. This multiplicity of factors, each of which could produce a highly specific situation, explains why it is so difficult to make comparative analyses and assessments. Nonetheless, there are several points which deserve mention.

A systematic analysis of international experience reveals that the fundamental problem which the use of one or more media raises is primarily the need to have a well defined project for education before having a "media project". The plan to use a medium must, in fact, begin and be justified by the existence of a serious educational problem in need of solution.

The reverse approach which in actual fact, despite its various guises, aims first of all at using modern media and then subsequently looking to see what educational problems they could solve, inevitably results in failure - any technology, however

sophisticated, is important unless it is directed to some specific purpose. There would seem to be a fairly widespread tendency to pay too much attention to the technical and operational aspects of projects and too little to defining their aims and the goals of education itself. In such cases, the poor results achieved in the use of modern media are no more than a reflection of shortcomings in the overall plan for education itself - one cannot in all fairness blame the tool when the overall plan is badly structured.

A further broad conclusion is the same errors and the same shortcomings occur time and again in all the experiments conducted throughout the world and, in particular, the tendency to use overly sophisticated media which are not really suited to the conditions generally found in rural areas. It is probable that, in many cases, the use of media which are less complex and less delicate than the more modern ones which everyone is keen to use, would achieve exactly the same results without anywhere near as many technological constraints. Before introducing the use of media for education on a wide scale, it is important to make sure that their technological complexity is compatible with the general technical level of the environment in which they will be used - this can only be done through careful preliminary planning which would include examining all the practical conditions affecting the control and use of the media.

One last, broad conclusion: a great number of experimental or pilot projects have seemed to produce encouraging results but, once applied on a wider scale, the results have been much less satisfactory. There is little doubt that this is due to the tendency to over-equip, over-man and over-finance these experimental projects and it becomes impossible to match these conditions in the full project. It is important therefore to conduct experiments in realistic conditions which correspond to those which will apply in the full-scale project and make absolutely sure that the features of a pilot project match those of the full project.

## RECOMMENDATIONS

The object of this report was to review the main types of organisational problem which occur when modern media are used for rural education. It cannot of course claim to have exhausted the subject - far from it. Judging from the experiments so far recorded, it would seem important at this stage to focus attention on well-defined and meaningful field studies. The choice of subjects for such studies is by no means an easy one, mainly on account of the variety of media used, the varying degrees to which they are employed and the vast differences in geographic and social environment. In such circumstances, it would seem logical to carry out studies of a comparative kind medium by medium, e.g. it would be possible, and probably very valuable, to compare two experiments on a similar scale and with similar objectives using radio - taking, on the one hand, an experiment which is generally considered as having been successful and, on the other hand, one whose results are less conclusive. By the same token, one could carry out comparative studies on the use of television or any other medium and, lastly, strictly from the organisational point of view, it would be certainly worthwhile to conduct a comparative study of two or three central audio-visual services.

Such studies would only be meaningful if they were carried out using a similar survey framework and method based on the same parameters. In particular, each of these comparative studies should focus on the following points:

- the methods used for deciding planning objectives and the resources employed,
- the methods of funding,
- factors relating to the socio-economic and cultural contexts,
- factors relating to the organisation of the target audiences.

Merely as an illustration, one could mention the fact that the Ivory Coast experiment is the best known - what is more, it is an attempt to use educational television on a wide scale, even in rural areas. Without any doubt, it would be instructive to analyse carefully the reasons for the somewhat

qualified success of the major experiments in the use of radio and television conducted in India as well as those in the Philippines and Central America which have not yet been thoroughly evaluated. And lastly, the recent initiatives taken by the new Government of Madagascar with regard to rural education (i.e. the purchase of 30,000 battery-operated television receivers) certainly deserve close study.

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